



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 909 595 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
05.01.2000 Bulletin 2000/01

(51) Int Cl.7: **B21C 3/02**

(43) Date of publication A2:
21.04.1999 Bulletin 1999/16

(21) Application number: **98308252.0**

(22) Date of filing: **09.10.1998**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Einset, Erik Oddmund**
Delaware, Ohio 43015 (US)
• **Johnson, David Mark**
Hendersonville, North Carolina 28791 (US)

(30) Priority: **14.10.1997 US 950004**

(74) Representative: **Goode, Ian Roy et al**
London Patent Operation
General Electric International, Inc.
Essex House
12-13 Essex Street
London WC2R 3AA (GB)

(71) Applicant: **GENERAL ELECTRIC COMPANY**
Schenectady, NY 12345 (US)

(54) **Wire drawing die with non-cylindrical interface configuration for reducing stresses**

(57) The present invention is addressed to improving a blank for a wire drawing die (60) formed from an annular cemented metal carbide support component (66) having a lengthwise extent from an entrance end (68) to an exit end (78) and extending radially about a central longitudinal axis (75) to define a cylindrical internal bore through the lengthwise extent, and a cylindrical sintered polycrystalline compact component (62) received within the bore of the support component and bonded thereto at an interface surface (63) extending a radial distance from and along the longitudinal axis from a wire drawing entrance end to a wire drawing exit end. The compact component is adapted to receive an aperture extending through its lengthwise extent about the

central longitudinal axis and is configured with an entrance zone (1) at the die entrance end which tapers inwardly therefrom to a reduction zone (2) whereat a wire to be drawn through the aperture makes initial contact with the compact component, and thence to a bearing zone (3) and an exit zone (4). The improvement in such wire drawing die blank involves the radial distance from said central longitudinal axis to said interface surface tapering inwardly (74) from the entrance end to a minimum prior to the bearing zone after which said radial distance remains substantially constant to said exit end. The corresponding wire drawing die and the method for producing the inventive wire drawing blank also form additional aspects of the present invention.

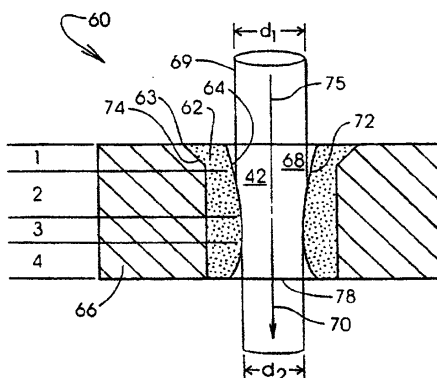


FIG. 3

EP 0 909 595 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 30 8252

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A,D	EP 0 734 797 A (GEN ELECTRIC) 2 October 1996 (1996-10-02) * the whole document *	1-7	B21C3/02
A	PATENT ABSTRACTS OF JAPAN vol. 015, no. 117 (M-1095), 20 March 1991 (1991-03-20) -& JP 03 008517 A (KOBE STEEL LTD), 16 January 1991 (1991-01-16) * abstract * * figures 1,2 *	1,2	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B21C B22F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		18 November 1999	Marc Augé
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 30 8252

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-11-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0734797 A	02-10-1996	US 5660075 A JP 9001227 A	26-08-1997 07-01-1997
JP 03008517 A	16-01-1991	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82